

NOTES ON WESTERN APHIDS¹

BY GEORGE F. KNOWLTON

This paper includes descriptions of five apparently undescribed aphids. The writer is indebted to Professor M. A. Palmer of the Colorado Agricultural Experiment Station for her opinions on the *Cinara* species.

Macrosiphum sporadicum Knowlton, n. sp.

This large green aphid was sometimes taken in moderate abundance upon rabbit brush, *Chrysothamnus nauseosus*, in parts of Boxelder County, Utah, principally between Brigham City and Harper, and below Mantua, in Brigham Canyon. Living individuals are rather characteristic, with their large, plump abdomens and the hoary, grayish pruinose covering over the apple-green body. Mounted specimens, especially smaller individuals, closely resemble *Macrosiphum packi* Knowlton.

Apterous vivipara. Size large, 3.7 to 4.1 mm. long and 1.45 to 1.63 mm. across the abdomen; some smaller, only 2.4 mm. long; color apple green and heavily pruinose above. Head with vertex deeply emarginate; eyes prominent, ocular tubercles rudimentary or lacking; hairs on vertex about 0.07 mm. long and slightly capitate; antennæ blackish beyond proximal one-third of III; antennal I large, somewhat gibbus; III, 0.93 to 1.01 mm. long with 4 to 7 circular sensoria; IV, 0.92 to 1.1 mm. without sensoria; V, 0.76 to 0.79 mm.; VI, 0.14 + 0.94 to 0.15 + 1.2 mm.; rostrum not exceeding second coxæ; hind tibia 2.0 to 2.34 mm. long; tarsus black, 0.2 mm. long. Abdomen plump; cornicles blackish, 0.92 to 1.0 mm. long in summer forms and 0.75 mm. in stem mothers; cauda long and broad, with six to seven curved hairs on each side and one to three on dorsal surface near distal end.

Alate vivipara. Size 2.0 to 2.03 mm. long. Head with prominent antennal tubercles; eyes as in aptera; antennæ beyond basal fifth of III blackish; antennal III 0.81 to 0.88 mm. long and with 9 to 17 broad margined sensoria; IV, 0.82 to 1.0 mm.; V, 0.74 to 0.8 mm.; VI, 0.13 + 0.5 mm. long. Wings with media twice branched (once branched in one wing); veins blackish with very faint marginal shading. Abdomen with cornicles blackish, slim, 0.63 to 0.71 mm. long, with a slight enlargement for about 0.1 mm. preceding the flange.

Apterous ovipara. Color reddish tan and whitish pruinose; size 2.23 to 2.45 mm. long, and 1.1 to 1.23 mm. wide. Ocular

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tubercles lacking; antennal tubercles somewhat diverging; antennal III, 0.81 to 0.89 mm. long with 4 to 5 small sensoria; IV, 0.9 to 0.92 mm.; V. 0.71 mm.; VI. 0.14 + 0.95 mm. long. Hind tibiae 1.65 to 1.84 mm. long, with much of basal half swollen and covered with sensoria. Hairs on abdomen capitate, but seldom distinctly broad, flattened or flabellate, as in apterous viviparous females; cornicles 0.71 mm. long, distal half dusky.

Stem mothers were collected in Utah upon *Chrysothamnus nauseosus* in Brigham Canyon, May 29, 1928. Winged females were taken in Brigham Canyon on July 21, 1928, and one was collected on the same date near Logan. Wingless females were collected throughout the season, in Brigham Canyon from May to mid-October. Several collections were made at Honeyville and Harper, particularly during September and October 1927. A few specimens were taken near Deweyville, September 3, 1927. Specimens were taken at Brigham, October 11, 1927, and in Logan Canyon, September 15, 1928. One collection was made at Preston, Idaho, September 10, 1927. Type locality, near river crossing in Brigham Canyon, below Mantua, in Boxelder County, Utah (Knowlton).

Macrosiphum sporadicum is armed with flattened to somewhat flabelliform hairs suggesting a relationship to the genus *Capitophorus*. This species is closely related to *Macrosiphum packi* Knowlton (Pan-Pac. Ent., 4: 169-171; 5: 81-84), from which it differs in having a heavy grayish pulverulence covering the body above, more lateral hairs on the less tapered cauda, and in its larger size.

MACROSIPHUM PACKI Knowlton

This species usually has four or three lateral hairs on each side of the cauda; somewhat more slender than *sporadicum*. Large *packi* females taken at Nephi, September 19, 1928, measured 3.2 and 3.45 mm. long and 1.0 and 1.4 mm. wide across the abdomen, respectively.

Collections: in Utah upon *Chrysothamnus nauseosus* at Cedar Fort, August 22, 1932; at Draper, July 7, 1929; Junction Valley, August 13, 1932; Yost, August 13, 1932; and upon *C. parryi* at Nephi, September 27, 1927, and Vernon, May 24, 1929. Collected upon *C. nauseosus* at Paris, Idaho, August 16, 1927 (Knowlton).

CAPITOPHORUS ELONGATUS Knowlton

Collected in Utah upon *Chrysothamnus parryi* at Emery, July 28, 1928, at Salina, July 28, 1928, and at Vernon, May 24, 1929, and upon *C. nauseosus* at Cedar Fort, August 22, 1932 (Knowlton).

CAPITOPHORUS CESTLUNDI Knowlton

Collected in Utah upon *Chrysothamnus nauseosus* at Cedar Fort, August 22, 1932; Grouse Creek, August 13, 1932, and upon what appears to be *C. parryi* at Stockton and Clover, August 14, 1929. Specimens also were taken upon *C. nauseosus* at Fort Bridger and Lyman, Wyoming, August 4, 1932 (Knowlton).

CAPITOPHORUS UTENSUS Pack and Knowlton

Collected upon *Chrysothamnus viscidiflorus* at Bryce Canyon and near Panguitch on July 29, 1928; Curlew Valley, and Cedar Spring (Knowlton).

Aphis nigragregalis Knowlton, n. sp.

Bluish black to greenish black, covered with a slight pulverulence. Feeds upon young twig bark, tender stems, leaves, and bases of flowers, causing distortion of the younger apical portions of the plant. Host, *Chrysothamnus nauseosus*; a few collections on other species of *Chrysothamnus*. Commonly attended by ants and attacked by syrphid fly maggots, aphid lions, and both adult and larval ladybird beetles. This aphid is sluggish and not easily disturbed.

This species keys to *Aphis gregalis* in Gillette and Palmer's key (Ann. Ent. Soc. Amer., 25: 374-375).

Apterous vivipara. Size 1.4 to 1.5 mm. long and 1.0 to 1.1 mm. wide across plump abdomens; abdomen and sometimes thorax and head mottled or banded with black. Head vertex broadly rounded; rostrum reaching beyond second coxæ, with tip narrowly obtuse; antennæ blackish; antennal III, 0.23 to 0.29 mm. long with 2 to 7 rounded sensoria; IV, 0.12 to 0.15 mm., usually with 1 distal sensorium; V, 0.12 to 0.15 mm.; VI, 0.1 + 0.11 to 0.13 + 0.16 mm. Prothorax with well-developed tubercles; lateral glandular protruberence on mesothorax; hind tibia 0.65 to 0.75 mm. long. Abdomen plump with two pairs of well developed lateral tubercles; cornicles black, lightly imbricated, slightly tapered, 0.11 to 0.14 mm. long; cauda black.

Alate vivipara. Abdomen greenish black to bluish black with

slight pulverulence. Size 1.07 to 1.6 mm. long. Head with vertex rounded in front; rostrum reaching to or beyond second coxæ; antennæ with few pointed hairs which are scarcely as long as thickness of segments; antennal III, 0.21 to 0.3 mm. long with 6 to 10 circular sensoria; IV, 0.11 to 0.16 mm., with 0 to 2 sensoria; V, 0.11 to 0.15 mm.; VI, 0.1 + 0.14 to 0.11 + 0.17 mm. long. Prothoracic tubercles large; a lateral structure on mesothorax appears to be glandular; wing venation frequently normal but with great variation, especially in media of fore wing, one of the forks often being lost; hind tibiæ 0.61 to 0.74 mm. long. Abdomen moderately plump; cornicles short, cylindrical to slightly tapered, weakly imbricated, without a flange, 0.08 to 0.1 mm. long; cauda conical, usually with 4 or 5 hairs on each side.

Apterous ovipara. Similar to apterous vivipara but abdomen more elongate at caudal end. Size 1.45 to 1.76 mm. long and 0.9 to 1.0 mm. wide. Antennal III, 0.2 to 0.21 mm. long, with 0 to 1 sensorium; IV, 0.1 to 0.11 mm.; V, 0.11 to 0.13 mm.; VI, 0.08 + 0.11 mm. long. Cornicles 0.1 mm. long, cylindrical; hind tibia 0.57 mm. long, somewhat swollen, and armed with scattered sensoria, especially near the middle.

Apterous male. Small, 1.04 mm. long and 0.58 mm. wide; head broad, vertex well rounded; antennæ blackish; antennal III, 0.19 mm. long and armed with 10 to 15 rounded sensoria; IV, 0.11 mm. with 6 to 8 sensoria; V, 0.11 mm. with 3 to 5 sensoria; VI, 0.1 + 0.14 mm. long. Prothoracic and first abdominal lateral tubercles large and conspicuous; a glandular protuberance on lateral margin of mesothorax resembles the lateral tubercles to some extent but is more broadly rounded and does not project out so far as do prothoracic tubercles. Hind tibia 0.48 mm. long; cornicles black, cylindrical to tapered, 0.05 to 0.06 mm. long; cauda black, broadly cone-shaped, with about 3 hairs on each side.

Collected upon rabbit brush in Utah at Amalga, Blacksmith Fork Canyon, Brigham City, Beaver Dam, Deweyville, Fielding, Hansel's Mountains, Harper, Honeyville, Salt Lake City, Logan, Logan Canyon, Smithfield, Trenton, and Wellsville (Knowlton). Type locality, 3 miles north of Brigham City, Utah.

Aphis cryptus Pack and Knowlton is a closely related form from root and crown of match brush; it may be separated from the above species by its flanged cornicles.

Aphis zonassa Knowlton, n. sp.

Described from ten apterous and two alate viviparous females collected upon rabbit brush, *Chrysothamnus parryi*, near Kanab, Utah, June 26, 1927. This aphid is close to *Aphis lugentis* Williams. The body size of *zanassa* is considerably smaller than

A. lugentis; because of this, its different host plant relationship and the uniformly smaller number of secondary sensoria on antennal III, *zonassa* is described as a new species.

Apterous vivipara. Color black; size 1.52 to 1.7 mm. long and 1.0 and 1.1 mm. wide across plump abdomen. Head with ocular tubercles present; rostrum sometimes reaching to abdomen, narrowly obtuse at tip; black antennæ with a few inconspicuous hairs; antennal III, 0.27 to 0.32 mm. long and with 0 to 1 distal rounded sensorium; IV, 0.17 to 0.2 mm. and armed with 4 to 7 sensoria; V, 0.14 to 0.18 mm. with 0 to occasionally 1 secondary sensorium; VI, 0.1 + 0.13 to 0.12 + 0.2 mm. long. Prothoracic tubercles moderately well developed; legs short, black and thick; hind tibia 0.95 mm. long. First lateral abdominal tubercle well developed, other less developed; reticulations cover part of the abdomen; darkened lateral areas present on sides back of thorax; cornicles black, cylindrical to somewhat tapered before moderate flange, 0.22 to 0.25 mm. long; cauda black.

Alate vivipara. Color black, size 1.2 to 1.3 mm. long; black antennæ inserted below margin of head; eyes with ocular tubercles well developed; rostrum as in aptera; antennal III, 0.31 mm. long with 15 to 21 rounded sensoria; IV, 0.17 mm. with 11 sensoria; V, 0.14 mm. without secondary sensoria; VI, 0.08 + 0.14 mm. long. Thorax with wing venation normal (or media sometimes but one-branched); hind tibiæ 0.76 mm. long. Abdomen with dusky imbricated patches along sides and dusky patch behind cornicles with imbrications somewhat setulose; cornicles black, 0.17 to 0.2 mm. long; cauda black.

APHIS CRYPTUS Pack and Knowlton

Winged individuals were collected in Utah upon *Gutierrezia* at Deweyville, September 13, 1927, and upon *Chrysothamnus nauseosus* in Logan Canyon, October 4, 1929 (Knowlton).

DUROCAPILLATA UTAHENSIS Knowlton

Distorting the apical growth of *Chrysothamnus viscidiflorus* near Park Valley and the Rosebud Ranch in Boxelder County, Utah, on July 23, 1932; Lasal and Moab, July 26, 1932 (Knowlton).

Cinara zoarcursara Knowlton, n. sp.

Collected by Dr. Vasco M. Tanner of the Brigham Young University, Provo, Utah, upon *Abies concolor*, in the Deep Creek Mountains of Utah during June, 1928. This sparsely-haired

form has shorter and heavier legs than most species in the genus *Cinara*.

Apterous vivipara. Size 3.52 mm. long and 2.93 mm. wide across the abdomen. Head dusky, with prominent median suture; vertex broadly rounded; ocular tubercles rudimentary or lacking; rostrum reaching cornicles; hairs on vertex 0.03 to 0.04 mm. long, sparse; antennæ 1.42 mm. long, being blackish beyond middle of III; antennal III, 0.57 mm. long, with one small distal sensorium; IV, 0.16 with 1 sensorium; V, 0.27, with 1 secondary sensorium; VI, 0.16 + 0.02 to 0.03 mm. long, the short unguis being nearly as heavy as the base; hairs on antennæ fine, relatively sparse, and 0.02 to 0.03 mm. long. Thorax with some irregular blackish dorsal markings; legs short, stout, and clothed with fine hairs; hind tibiæ 1.5 mm. long, and 0.08 mm. thick at middle, hairs 0.03 mm. long; first joint of tarsi 0.05 long on shortest side and 0.14 mm. long at greatest length; distal segment 0.28 mm. long. Abdomen broad, with blackish dorsal and lateral areas, larger areas adjoining the cornicles and anterior to the cauda; abdominal hairs sparse, about 0.03 to 0.05 mm. long; cornicles small, blackish, on slightly raised bases 0.16 to 0.24 mm. across, which merge with blackish adjoining areas; cauda and anal plate blackish.

Cinara zoarcbursara resembles *C. taxifoliæ* (Swain), *pseudotsugæ* (Wilson) and *splendens* (G. and P.) in possessing rather small cornicles mounted upon relatively flattened bases. It differs markedly from these species in being armed with shorter hairs, and differs in antennal segment ratios.

Type in the collection of the writer; paratypes in the collection of the Brigham Young University insect collection.

Cinara chamberlini Knowlton, n. sp.

Material received from Professor W. J. Chamberlin of the Oregon Agricultural Experiment Station on February 18, 1931. One collection had been made upon white pine, *Pinus monticola*, at Union Creek Ranger Station, Jackson County, Oregon, August 6, 1930, the type locality. The other collection was made at Chico, Kitsop County, Washington, May 6, 1930. Reported as damaging sugar pine and white pine.

Apterous vivipara. Large, 5.6 to 6.3 mm. long and 3 to 3.2 mm. wide across the abdomen. Head with median suture; ocular tubercles present or absent; rostrum reaching to or beyond middle of abdomen; antennæ dusky beyond middle of III and armed with rather fine hairs; antennal III, 1.1 to 1.42 mm. long, with 6 to 7

sensoria; IV, 0.54 mm. with 2 to 4 sensoria; V, 0.61 mm. with 1 secondary sensorium; VI, 0.18 + 0.05 to 0.21 + 0.06 mm. long. Hind

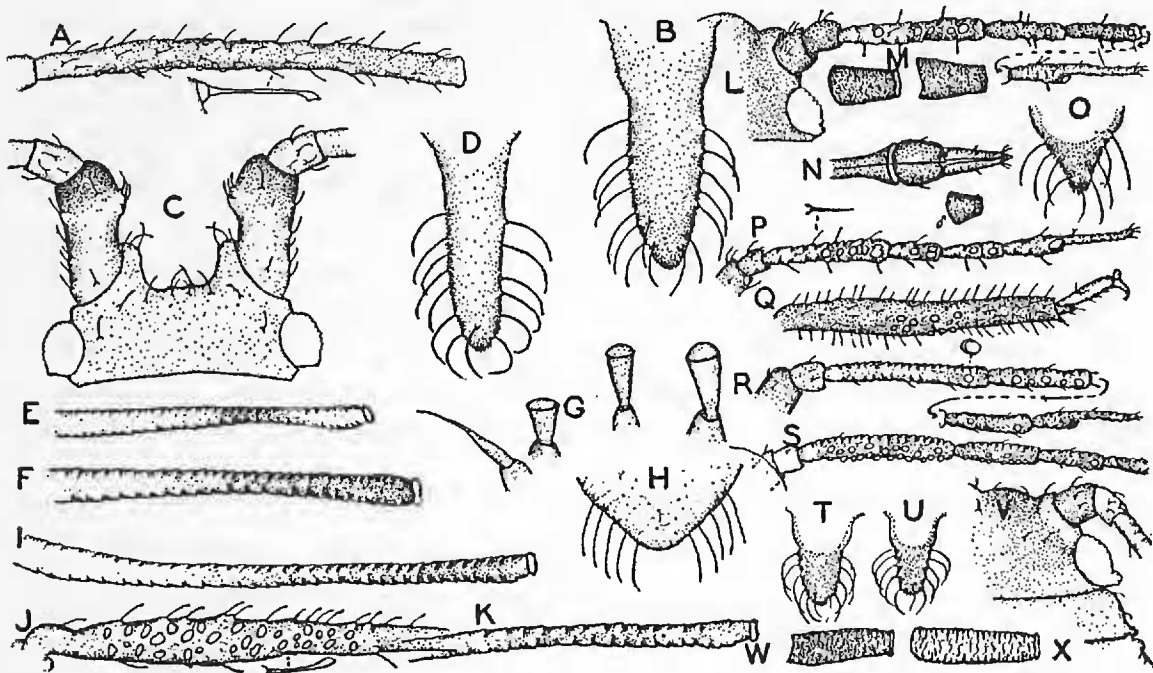


Fig. 1. *Macrosiphum sporadicum* n. sp. A, antennal III of alate; B, cauda of apterous; C, head of alate; D, cauda of alate; E, cornicle of alate; F, cornicle of stem mother; G, abdominal hairs of apterous; H, anal plate of apterous; I, cornicle of apterous; J, proximal portion of hind tibia of oviparous; K, cornicle of oviparous. *Aphis nigragregalis* n. sp. L, antenna of apterous; M, cornicles of apterous; N, apical portion of rostrum, apterous; O, cauda of apterous; P, antenna of alate; Q, hind tibia of oviparous. *Aphis zonassa* n. sp. R, antenna of alate; S, antenna of apterous; T, cauda of apterous; U, cauda of alate; V, head and prothorax of apterous; W, cornicle of alate; X, cornicle of apterous.

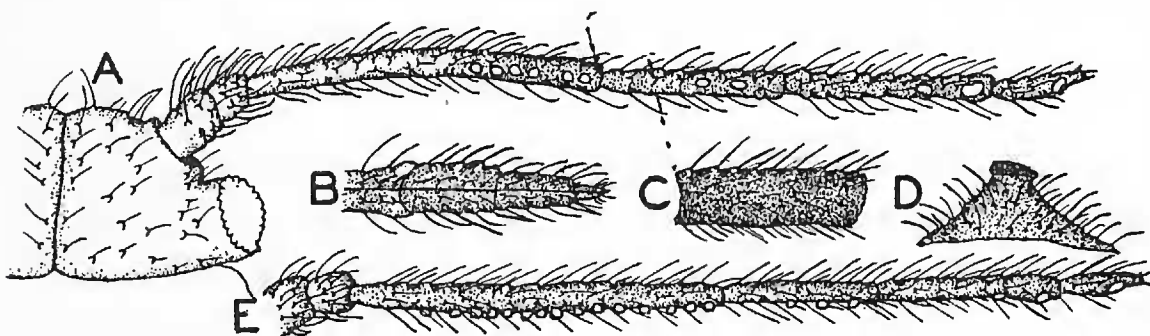


Fig. 2. *Cinara chamberlini* n. sp. A, head and antenna of apterous; B, distal end of rostrum, apterous; C, section of hind tibia of apterous; D, cornicle of apterous; E, antenna of alate.

tibia curved, 6 to 6.1 mm. long; hairs rather numerous and not equal in length to thickness of middle of hind tibia. Cornicles blackish, 0.52 mm. in diameter at the base, with numerous hairs; hairs on dorsum of abdomen 0.07 to 0.1 mm. long, fine.

Alate vivipara. Body large, 4.6 mm. long and 1.75 mm. wide: Head broad, dusky, with prominent median suture; ocular tubercles present; antennal III, 1.1 mm. long with 14 to 16 conspicuously tuberculate sensoria; IV, is 0.48 mm. with 3 sensoria; V, 0.6 mm. with 1 secondary sensorium; VI, 0.2 + 0.06 mm. long; antennal hairs 0.09 to 0.1 mm. long, less than twice the thickness of antennal segments. Wings large, evanescent media twice-branched; hind tibia 5.4 mm. long, numerous hairs subequal to thickness of the segment; first joint of hind tarsi 0.1 mm. on dorsal and 0.17 mm. on ventral margin; second joint 0.3 mm. long. Cornicles dusky, conspicuously rising from a conical base 0.42 mm. wide.

Cinara chamberlini runs to *edulis* (Wilson) in Gillette and Palmer's key (Ann. Ent. Soc. Amer., 24: 844), from which it differs in being almost twice as large, and in having more secondary sensorio on III of both alate and apterous forms.

CINARA PONDEROSÆ (Williams)

Collected upon yellow pine, *Pinus ponderosa*, Corvallis, Oregon, October, 1931. Also collected upon white pine (Chamberlin).

ANOECIA QUERCI (Fitch)

Four winged females were taken upon one small twig of *Chrysothamnus nauseosus* in Brigham Canyon, Utah, October 5, 1929; probably accidental (Knowlton).

PSEUDOGAURAX SIGNATUS LW.

This little fly, which reminds one of a *Drosophila*, prevents to a small degree the unrestricted multiplication of the Black Widow Spider. Mr. W. B. Cartwright, of the U. S. Bureau of Entomology and Plant Quarantine, collecting egg sacks of this spider during July, 1934, that contained puparia of this fly. Apparently all the eggs in these sacks had been destroyed. Dr. C. E. Greene of the U. S. Bureau, determined the species.—H. H. Keifer, California State Department Agriculture.